tion, showing a portion of the table provided with a collection bottle below a fluid discharge tube, the table being in a lowered position;

FIG. 6 is an enlarged view similar to FIG. 5 but with the table in elevated position;

FIG. 7 is an elevational view showing a portion of the table, a lever arm positioned against the rotating table, and the switches actuated by the lever arm;

FIG. 8 is an enlarged plan view of a portion of the table showing one of the slots provided therein;

FIG. 9 is a cross-sectional view of the structure shown in FIG. 8 taken along line **9—9**;

FIG. 10 is a cross-sectional view of the structure shown in FIG. 8 taken along line **10—10**;

FIG. 11 is an enlarged perspective view of a clip adapted to be inserted in a groove in the table;

FIG. 12 is an enlarged cross-sectional view of the end of the discharge tube that is shown in FIGS. 5 and 6;

FIG. 13 is a side view of a portion of the structure shown in FIG. 12 taken along line **13—13**; and

FIG. 14 is a schematic wiring diagram, partially in block form, illustrating the operation of the present invention.

Referring now to the drawing with particular reference to FIGS. 1–3, the sample collection apparatus according to the present invention includes a main frame **11** on which a vertical table drive shaft **12** is supported by means of a bearing housing **13**. The table drive shaft **12** is capable of rotary and vertical linear motion as described in greater detail below.

Horizontally positioned at the lower end of the table drive shaft **12** by means of a retaining nut **15** is a circular collector table **14** concentrically mounted on the drive shaft **12** for rotary and vertical linear movement with the drive shaft. The collector table **14** is constructed and arranged to support a plurality of collection bottles in the manner described in detail below.

The drive shaft **12** is driven by a gear **16** which has gear teeth provided on its outer periphery and a vertical key way **17** provided on its inner periphery for cooperation with a key **18** on the drive shaft **12**. Power is transmitted to the gear **16** from a motor **19** by means of a motor shaft **21** provided on its end with a pinion **22** which engages the gear teeth on the outer periphery of the gear **16**.

The drive shaft **12** which is movable vertically by means of movement of the key **18** in the keyway **17** is continuously urged upwardly by a helical table return spring **23** the bottom of which bears against the top surface of the gear **16** and the top of which bears against a washer **24** held adjacent the upper end of the shaft **12** by means of a snap ring **25**. An adjusting screw **26** is threaded into a threaded bore in the top end of the drive shaft **12** and is locked in place by a lock nut **27**. An antifriction washer **28** of, for example, Teflon, is positioned between the bottom surface of the gear **16** and the top surface of the bearing housing **13** to permit easy rotation of the drive shaft **12**.

A bracket **31** positioned on the frame **11** extends above the upper end of the shaft **12** and with a pin **33** rotatably supports one end of a lever rod **32** which extends across the top of the screw **26** in the shaft **12**. Near the opposite end of the lever rod **32** from the pivot pin **33** is rotatably supported a solenoid plunger **34** by means of a link **35** and pivot pins **36** and **36'**. A solenoid **37** surrounding the solenoid plunger **36** is fixedly secured to the frame **11**. Between the pivot pins **33** and **36'** a button portion **38** of the lever rod **32** contacts the upper surface of the screw **26** for applying a downard force to the shaft **12**.

Upon energizing the solenoid **37** the solenoid plunger **34** is pulled down and causes the button portion **38** of the lever rod **32** to force the drive shaft **12** vertically downward compressing the spring **23**. Upon deenergizing the solenoid **37**, the plunger **34** is released and the

return spring **23** causes the drive shaft **12** to move vertically upward.

In order to provide a smooth and gradual movement of the lever rod **32** an air pot **41** is mounted on the frame **11** and is provided with an air pot piston **42** which is secured by a connecting rod **43** and a clevis **44** to the end of the lever rod **32** opposite the end attached to the bracket **31**. An escapement adjustment screw **45** is provided for adjusting the flow of air into and from the air pot **41**. Also, a flat leaf spring **46** is secured to the bracket **31** and contacts the upper surface of the lever rod **32** during its upward movement to further cushion upward movement of the shaft **12** as it nears the end of its stroke.

The collection table **14** shown in FIGS. 1, 4 and 8–10 is provided with a plurality of radial slots **51** equally spaced about the circumference. The slots **51** are of equal length and at the interior-most portion of each of the slots **51** an annular recess **52** is provided in the top surface of the table **14** for holding a collection bottle. A washer **53** of resilient material such as, for example, rubber is secured as by cement in the bottom of the recess **52** to cushion the collection bottles on the table **14**. The top edges of the slots **51** are beveled as at **54** for cooperation with positioning rollers to be described in detail below.

The edges of the slots **51** at the periphery of the table **14** are also beveled to provide a timing notch at the initial portion of each of the slots **51** to receive a timing roller. In each slot a horizontal groove **56** (see FIG. 10) extends radially inwardly from the periphery of table **14** to a region adjacent the recess **52** and is adapted to receive a clip member of the type described below for proper timing of the operating cycle.

FIG. 11 is a perspective view of a thin by-pass clip member **57** which has a central slot extending substantially the length of a horizontal main body portion **59** and vertically extending face prongs **60** at the front face thereof. The clip member **57** is inserted into the groove **56** in one of the slots **51** and is held in place by spring action so that the face prongs **60** are positioned substantially at the periphery of the table **14** to effectively close the notch in the initial portion of the slot **51**. A return clip member **57'** (see FIG. 4) is constructed similar to the by-pass clip **57** but is provided with a longer main body portion **59'** so that the face prongs **60'** extend radially outwardly from the periphery of the table **14** for actuating apparatus associated with the sample collection apparatus to end one cycle of the collection apparatus and begin another as set forth in greater detail below.

Into certain of the radial slots **51** are inserted collection bottle **61** (see FIGS. 5 and 6) which have an upper chamber **62**, a lower chamber **63** and a communication passage **64** providing fluid communication between the bottom of the upper chamber **62** and the top of the lower chamber **63**. A vertically aligned inlet tube **65** provided with a radially outwardly extending lip **66** at the top end thereof and a neck **65'** extending from the top of the bottle **61** projects through the upper chamber and the passage **64** into the lower chamber **63** to provide communication between the lower chamber **63** and the exterior of the bottle **61**. A bottle sealing cap **67** of, for example, rubber is provided on the top of the inlet tube **65**. Also, an outlet tube **68** projects outwardly from the upper chamber at an angle with respect to the inlet tube for providing communication between the top of the upper chamber and the exterior of the bottle **61**. A vent cap **69** of, for example, rubber which has a pressure exit opening **71** cut transversely therein is provided on the outer end of the outlet tube **68** and, under normal conditions, the pressure exit opening **71** is closed. However, horizontal pressure applied to the side of the vent cap **69** opens the exit opening **71** for permitting carrier gas to escape from the upper chamber **62**. The upper chamber **62** is filled with a scrubber material **70** such as, for example, glass wool. A helical spring **72** is provided on